Remarks/Argument

Claims 1-3, 5-7 and 14-20 are in the application. Claims 2, 3 and 14-20 stand withdrawn from consideration pursuant to a restriction requirement. Claims 4 and 8-13 have been canceled herein without prejudice to the filing of a continuing application. Claims 1 and 5-7 are amended herein and are pending for examination.

Claim 1 has been amended to recite that the treated subject is a mammal. Support is found in canceled claim 4. Claim 1 has been amended to recite that the method comprises administering to the mammal a genetic molecule which increases the levels of EphA4 receptor in cells occupying a region surrounding the spinal cord. Support for the administration of a genetic molecule encoding an EphA4 receptor appears at page 11, lines 18-24.

Claim Objections

Claims 8, 9 and 13 are objected to as depending from non-elected claims. Claims 8, 9 and 13 have been canceled.

Claim Rejections Under Section 112, 2nd Paragraph

Claim 1 has been rejected as allegedly omitting essential steps. The alleged omitted step is how Eph is elevated or otherwise enhanced. Claim 1 has been amended to recite that the level of EphA4 is increased by administration of a genetic molecule.

Claim 1 has been rejected as omitting an essential element. The alleged omitted element is "what constitutes a functional equivalent" of an Eph receptor. The questioned language has been removed from the claim.

Claims 1 and 6-13 have been rejected as indefinite because of the phrase "animal or bird". This language has been removed from claim 1, and replaced with "mammals".

Claim Rejection Under Section 112, 1st Paragraph – Written Description

Claims 1 and 4-13 have been rejected for allegedly failing to comply with the written description requirement. The rejection alleges that the claims lack written description because of the absence of structure or function for "functional equivalent" of Eph. The language has been removed from the claim. The rejection alleges that the claims lack written description in the absence of a recitation of the agent which is administered to achieve the desired effect. The claims have been amended to recite administration of a genetic molecule which increases the

level of EphA4 receptor in target cells. It is respectfully submitted that the amendments to claim 1 overcome the Section 112 written description rejections.

Claim Rejection Under Section 112, 1st Paragraph – Enablement

Claims 1 and 4-13 have been rejected for allegedly failing to comply with the enablement requirement. The rejection alleges that the specification fails to provide guidance for the successful regeneration, growth and/or development of a central nervous system (CNS) in any animal by increasing, elevating or otherwise enhancing the levels of an Eph receptor, its functional equivalent, or ligand. The rejection alleges that resolution of various complications in regard to targeting the role of a particular gene in an organism in CNS is unpredictable. The rejection further alleges that there is no known nexus between any known disease state or condition and Eph receptors, their functional equivalents, or ligands.

Without necessarily agreeing with the rejection, and in an effort to expedite prosecution, the claims have been amended to recite a method of CNS regeneration, growth and/or development by administration of a genetic molecule which has the effect of increasing the level of the EphA4 receptor in cells occupying a region surrounding the spinal cord. It is respectfully submitted that one of ordinary skill in the art would accept that the specification, coupled with the knowledge and ordinary skill of the prior art, enables the practice of the invention as now claimed without undue experimentation.

The teachings of the specification establish a clear link between the level of EphA4 receptor and the health of CST axons, indicating that EphA4 upregulation can facilitate repair and replacement of those axons. Genetic molecules that up-regulate the EphA4 can be readily devised. As disclosed in the specification, such genetic molecules include nucleic acids encoding the EphA4 receptor. Given the teachings of the specification and the general knowledge in the art, one or ordinary skill could readily act to increase the levels of EphA4 at sites of neural disease or injury, by administering genetic molecules such as nucleic acids encoding EphA4, or by transplanting cells which comprise nucleic acids encoding EphA4.

The examples of the specification convincingly show that animals deficient in the EphA4 receptor display a gross locomotor abnormality in their hind limbs. Anatomical analysis and axonal tracing studies revealed severe disruption of the CST of these animals. The examples

show that EphA4 is an essential axon guidance factor which is required for correct CST formation. Therefore, it can be reasonably concluded that elevating the levels of EphA4 will result in repair and replacement of CST axons, by ensuring the axons' correct guidance during regeneration after injury or disease to the brain or spinal cord. The repair and replacement of the CST axons in turn facilitates regeneration, growth and/or development of a CNS in the treated subject.

The rejection alleges that undue experimentation is required to determine which diseases and injuries are associated with Eph receptors. A person skilled in the art would readily conclude from the examples of the specification that the relevant diseases and conditions associated with the EphA4 receptor would include those diseases and conditions associated with the CST and locomotion, such as amytrophic lateral sclerosis and paralysis. Thus, undue experimentation is not required to determine the diseases and injuries that are associated with EphA4 receptors.

Reconsideration and withdrawal of the Section 112 enablement rejection is respectfully requested.

Conclusion

The claims remaining in the application are believed in condition for allowance. An early action to that end is earnestly solicited.

Respectfully submitted

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